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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/688,109	10/16/2003	Robert P. Meagley	42P17302	9235

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EXAMINER	
WALKE, AMANDA C	
ART UNIT	**PAPER NUMBER**
1752	

DATE MAILED: 03/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/688,109	MEAGLEY ET AL.	
	Examiner	Art Unit	
	Amanda C Walke	1752	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 October 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-30* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-30* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *16 October 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities: In paragraph [0026] and [0029], R is not defined. It appears as though R should be defined as it is in paragraph [0025], but it is requested that this be clarified.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-30 are rejected under 35 U.S.C. 102(e) as being anticipated by Szmanda et al (6,787,286).

Szmanda et al disclose photoresists are provides that are suitable for short wavelength imaging, particularly sub-170 nm such as 157 nm. Resists of the invention comprise a fluorine-containing polymer, a photoactive component, and a solvent component. Preferred solvents for use on the resists of the invention can maintain the resist components in solution and include one or more preferably two or more (i.e. blends) of solvents. In particularly preferred solvent blends of the invention, each blend member evaporates at substantially equal rates, whereby the resist composition maintains a substantially constant concentration of each blend member. A solvent blend that comprises water, and one or more additional solvents such as one or more of a

carbonyl and/or non-carbonyl solvent such as a heptanone, cyclohexanone, ethyl lactate, propylene glycol methyl ether acetate, and the like; preferably, water is present in minor amounts, e.g. no more than about 5 volume %, more preferably no more than about 4, 3, 2, 1, 0.5 or 0.25 volume percent of the total solvent component of a resist composition. A variety of photoactive components may be employed in resists of the invention. Photoacid generators (PAGs) are generally preferred. Particularly preferred PAGs for use in resists of the invention include onium salt compounds including iodonium and sulfonium compounds; and non-ionic PAGs such as imidosulfonate compounds, N-sulfonyloxyimide compounds; diazosulfonyl compounds and other sulfone PAGS including α,α-methylenedisulfones and disulfonehydrazines, nitrobenzyl compounds, halogenated particularly fluorinated non-ionic PAGS. Preferred PAGs do not have aromatic substitution. A variety of other PAGs may be used in resists of the invention, including non-ionic PAGs such as substituted disulfone compounds; sulfonate compounds including N-oxyimino sulfonate compounds, α-cyano N-oxyimino sulfonate compounds; sidulfone hydrazine compounds; diazomethanedisulfone compounds; nitrobenzyl compounds; substituted acylsulfonoium compounds; and oxime sulfonate compounds including bis-N-oxyimidosulfonate compounds. Preferred basic additives are amine compounds, including primary, secondary, tertiary and quaternary amines. Amines that are not highly nucleophilic are generally preferred to avoid undesired reaction of the base additive with other resist composition components such as the PAG and/or solvent. More particularly, secondary and tertiary amines are generally preferred, particularly secondary and tertiary amines that have sterically large substituents, such as optionally substituted alkyl having at least 3 or 4 carbons e.g. optionally substituted C3-20 alkyl; optionally substituted alkyl having at least 3 or 4

carbons e.g. optionally substituted C3-20 alkyl including alicyclic groups such as optionally substituted cyclohexyl, adamantly, isobornyl, etc.; optionally substituted alkenyl having at least 3 or 4 carbons e.g. optionally substituted C 3-20 alkenyl; optionally substituted alkynyl having at least 3 or 4 carbons e.g. C 3-20 alkynyl; optionally substituted carbocyclic ayl such as phenyl; optionally substituted heteroaryl or heroalicyclic such as heteroaryl or heteroalicyclic groups having 1 to 3 separate or fused rings with 1 to 3 hetero atoms (particularly N, O or S) per ring. Specifically preferred basic additives for use in resist compositions of the invention include DBU (1,8-diazobicyclo[5.4.0]undec-7-ene); DBN (1,5-diazabicyclo[4.3.0]non-5-ene; N,N-bis-(2-hydroxyethyl)piperazine; N,N-bis-(2-hydroxyethyl)-2,5-diazobicyclo[2.2.1]heptane; N-triisopropanolamine; dibutyl amine preferably branched isomers thereof such as diisobutylamine and ditertbutylamine; tributyl amine and again branched isomers thereof such as ditertbuylamine and tritertbutylamine; and the like. Optionally substituted piperidine and other optionally piperazine compounds also will be suitable, particularly hydroxy-substituted or C 1-12 alcohol-substituted piperidines and piperazines, such as N-ethanol piperidine and N-diethanol piperazine. Other basic compounds also are suitable, particularly having one or more nitrogen ring members and 5 to about 8 total ring members. Other preferred base additives include hydroxy-alkyl secondary and teriarty amines, e.g. secondary and tertiary amines having at least one N-substituent of C 2-20 alkyl having one, two three or more hydroxy moieties, typically one or two hydroxy moieties; alicyclic amines where at least one secondary or tertiary nitrogen is at the junction or bridgehead of a bicyclic or multicyclic compound. Pyridyl compounds also will be suitable such as di-butyl pyridine and polymers thereof such as poly(vinylpyridine). In general, polymeric basic additives will be suitable, e.g. substituted amines having a molecular weight of

up to about 200, 300, 400, 500, 600, 700, 800, 900, 1000, 1100, 1200, 1300, 1400 or 1500. The dissolution inhibitor also need not be polymeric (i.e. contain repeat units). For example, a variety of non-polymeric compositions are suitable dissolution inhibitors for resists of the invention, particularly where those materials are fluorinated. For instance, suitable are fluorinated compounds having one or more separate or fused rings, including fluorinated steroidal compounds, e.g. a fluorinated cholates and lithocholates such as cholic acid, deoxycholic acid, lithocholic acid, t-butyl deoxycholate, t-butyl lithocholate, and the like. Fluoirnated steroidal compounds may be suitably preferred by fluorination of a known steroid, where a carbonyl group is modified to a difluromethylene. Such non-polymeric compounds also may have one photoacid-labile groups, e.g. a photoacid-labile ester or acetal moiety. resists of the invention also may contain one or more plasticizer materials, which can inhibit or prevent undesired crazing or cracking of a deposited resist layer as well as enhance adhesion of the resist layer to an underlying material. Preferred plasticizers include e.g. materials having one or more hetero atoms (particularly S or O), and preferably materials having a molecular weight of about 20 to 1000, more typically about 20 to about 50, 60, 70, 80, 90, 100, 150, 200, 250, 300, 400 or 500, e.g. adipates, sebacates and phthalates such as bis(2-butoxyethyl)adipate; bis(2-butoxyethyl)sebacate; bis-(2-butoxyethyl)phthalate; 2-butoxyethyl oleate; diisodecyl adipate; diisodecyl glutarate; and poly(ethylene glycols) such as poly(ethyleneglycol)acrylate, poly(ethylene glycol)bis(2-ethylhexanoate), poly(ethylene glycol)dibenzoate, poly(ethylene glycol)dioleate, poly(ethylene glycol)monooleate, tri(ethylene glycol)bis(2-ethylhexanoate), and the like.

Given the teachings of the reference, the instant claims are anticipated.

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Chang et al (6,316,159), Chen et al (6,703,178), Lee et al (2002/0160301), Takasu et al (2004/0009427), Lu et al (2003/0077539), Tao et al (2004/0131973), and Imai et al (2004/0081914), are cited for their teachings of similar materials.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Amanda C Walke whose telephone number is 571-272-1337. The examiner can normally be reached on M-R 5:30-4.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia Kelly can be reached on 571-272-1526. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Amanda C Walke
Examiner
Art Unit 1752

ACW
March 20, 2005